

REMARKS/ARGUMENTS

Applicants would like to thank the examiner for the careful consideration given the present application. By the present amendment, claims 1-9, 13, 14, and 16-31 remain in the application while claims 1-3, 14, 17, 18, 20, 21, 25, 26, 28, and 29 are amended. Claims 10-12 and 15 have been canceled previously. Applicants respectfully request reconsideration and allowance.

Claim Objections

Claims 17, 18, 20, and 21 are objected to because they are dependent upon claims that have been canceled. Claims 17, 18, 20, and 21 have amended per the examiner's request. Therefore, the objection as it applies to the claims is moot, and the consideration of the patentability of claims 17, 18, 20, and 21 is respectfully requested.

Claim Rejections - 35 USC § 102

Claims 1, 3, 13, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Bessyo (US Patent 6,362,463). The rejection is respectfully traversed for at least the following reasons.

Independent claims 1 and 3, in part, explicitly require "the lowest frequency is set to a first frequency at the beginning of operation of the high-frequency heating apparatus, and the lowest frequency is set to a second frequency which is lower than the first frequency gradually thereafter". Bessyo fails to teach the above-mentioned limitations. The disclosures in Bessyo cited in the Office action (Fig. 15, col. 13, lines 5-7, col. 14, lines 20-25, and col. 12, lines 57-64) are directed to an output frequency modulation section which delivers a signal to the driving section (see col. 13, lines 4-7). Bessyo discloses a frequency modulation section having an operation frequency around 30 KHz or below (see col. 12, lines 57-64). Bessyo, however, does

not teach that the lowest frequency is set to a first frequency at the beginning of operation of the high-frequency heating apparatus, and set to be a second frequency which is lower than the first frequency gradually thereafter, as required by claims 1 and 3. In view of the differences between the claimed subject matter and the cited reference, applicants respectfully submit that claims 1 and 3 are allowable over the reference, and withdrawal of the rejection is respectfully requested.

Claims 13 and 30 depend from either independent claim 1 or 3 and are, therefore, allowable for at least the reasons provided in support of the allowability of claims 1 and 3.

Claim Rejections - 35 USC § 103

Claims 2, 20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bessyo in view of Manabu (US Patent Publication 2003-259643).

Regarding independent claim 2, similar to the explanations made above with respect to the patentability of claims 1 and 3, Bessyo fails to teach or suggest all limitations as required by claim 2. Furthermore, Manabu also does not teach or suggest the above-mentioned limitations and thus, fails to overcome the deficiency of Bessyo. Therefore, applicants respectfully submit that independent claim 2 is allowable over the references, and withdrawal of the rejection is respectfully requested.

Claims 20 and 22 depend from independent claim 2 and are, therefore, allowable for at least the reasons provided in support of the allowability of claim 2.

Claims 4, 5, 6, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bessyo in view of Noda (US Patent 5,274,208).

Regarding claims 4 and 24, they further require “wherein a lowest frequency limiting circuit is inserted between the frequency-modulated signal generation circuit and the dead time generation circuit”. It is acknowledged in the Office action that Bessyo fails to disclose the

above-mentioned limitations. Noda, however, does not overcome the deficiency of the Bessyo reference. Noda discloses an overvoltage detection circuit (34) generates a low level interrupt signal when the detection voltage exceeds the reference voltage (see col.7, lines 12-16), which is distinguished from the limitations set forth in claims 4 and 24. Noda also fails to teach or suggest that the lowest frequency limiting circuit is inserted between the frequency-modulated signal generation circuit and the dead time generation circuit. Therefore, applicants respectfully submit that claims 4 and 24 are allowable over the references, and withdrawal of the rejections is respectfully requested.

Claims 5 and 6 depend from claim 4 and are, therefore, allowable for at least the reasons provided in support of the allowability of claim 4.

Claims 7, 9, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bessyo in view of Teruya (Japan Patent Publication 2003-257604).

Regarding claims 7 and 9, they further require “wherein the dead time generation circuit generates a dead time increased in accordance with increase of a switching frequency.” It is acknowledged in the Office action that Bessyo fails to disclose the above-mentioned limitations. Teruya, however, does not overcome the deficiency of the Bessyo reference. By contrast, Teruya teaches that the dead time is enlarged when the input set value is low while the drive frequency is fixed (see pp. 13, [0035]). Therefore, applicants respectfully submit that claims 7 and 9 are allowable over the references, and withdrawal of the rejections is respectfully requested.

Claim 27 depends from claim 3 and is, therefore, allowable for at least the reasons provided in support of the allowability of claim 3.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bessyo in view of Teruya, and further in view of Manabu. Claim 8 depends from claim 1 and is, therefore, allowable for at least the reasons provided in support of the allowability of claim 1.

Claims 14 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bessyo in view of Yang (US Patent Publication 2005/0174819). Claims 14 and 31 depend from either independent claim 1 or 3 and are, therefore, allowable for at least the reasons provided in support of the allowability of claims 1 and 3.

Claims 16-18, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bessyo in view of Manabu, and further in view of Noda. Claims 16-18, 25, and 26 depend from either independent claim 2 or 3 and are, therefore, allowable for at least the reasons provided in support of the allowability of claims 2 and 3.

Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bessyo in view of Manabu, and further in view of Teruya. Claims 19 and 21 depend from independent claim 2 and are, therefore, allowable for at least the reasons provided in support of the allowability of claim 2.

Claims 23 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bessyo in view of Manabu, and further in view of Teruya. Claims 23 and 28 depend from independent either claim 2 or 3 and are, therefore, allowable for at least the reasons provided in support of the allowability of claims 2 and 3.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bessyo in view of Manabu, and further in view of Yang and Teruya. Claim 29 depends from claim 3 and is, therefore, allowable for at least the reasons provided in support of the allowability of claim 3.

Double Patenting

Claims 1-3 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3 of co-pending Application No. 10/571846 in view of Moriya. It is noted that, the co-pending application has not yet issued as a patent and thus, it is still a provisional double patenting rejection and not an actual double patenting rejection. Applicants therefore may file a terminal disclaimer at that time when it becomes an actual double patenting rejection.

In consideration of the foregoing analysis, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 16-0820, our Order No.: NGB-41339.

Respectfully submitted,
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